

AlaRS (M6-P2E5): sc-81712

BACKGROUND

Aminoacyl-tRNA synthetases function to catalyze the aminoacylation of tRNAs by their corresponding amino acids, thus linking amino acids with tRNA-contained nucleotide triplets. Class II tRNA synthetases are a highly conserved subfamily of tRNA synthetases that have a catalytic domain through which they interact with the amino acid acceptor of the tRNA and a second domain through which they interact with the rest of the tRNA molecule. AlaRS (alanyl-tRNA synthetase), also known as AARS, is a 968 amino acid cytoplasmic protein that belongs to the class II subfamily of tRNA synthetases. Functioning as a monomer, AlaRS catalyzes the ATP-dependent attachment of alanine to a corresponding tRNA(Ala), thereby producing alanyl-tRNA(Ala). Defects in the gene encoding AlaRS may lead to an accumulation of misfolded proteins within the cell, ultimately leading to cell death.

REFERENCES

1. Francklyn, C., et al. 1989. Aminoacylation of RNA minihelices with alanine. *Nature* 337: 478-481.
2. Shiba, K., et al. 1995. Human alanyl-tRNA synthetase: conservation in evolution of catalytic core and microhelix recognition. *Biochemistry* 34: 10340-10349.
3. Nichols, R.C., et al. 1995. Localization of two human autoantigen genes by PCR screening and *in situ* hybridization—glycyl-tRNA synthetase locates to 7p15 and alanyl-tRNA synthetase locates to 16q22. *Genomics* 30: 131-132.
4. Ripmaster, T.L., et al. 1995. Wide cross-species aminoacyl-tRNA synthetase replacement *in vivo*: yeast cytoplasmic alanine enzyme replaced by human polymyositis serum antigen. *Proc. Natl. Acad. Sci. USA* 92: 4932-4936.
5. Chihade, J.W., et al. 2000. Origin of mitochondria in relation to evolutionary history of eukaryotic alanyl-tRNA synthetase. *Proc. Natl. Acad. Sci. USA* 97: 12153-12157.
6. Lovato, M.A., et al. 2001. Translocation within the acceptor helix of a major tRNA identity determinant. *EMBO J.* 20: 4846-4853.
7. Sang Lee, J., et al. 2002. Interaction network of human aminoacyl-tRNA synthetases and subunits of elongation factor 1 complex. *Biochem. Biophys. Res. Commun.* 291: 158-164.
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CHROMOSOMAL LOCATION

Genetic locus: AARS (human) mapping to 16q22.1; Aars (mouse) mapping to 8 E1.

SOURCE

AlaRS (M6-P2E5) is a mouse monoclonal antibody raised against a synthetic peptide corresponding to amino acids 956-965 of AlaRS of human origin.

RESEARCH USE

For research use only, not for use in diagnostic procedures.

PRODUCT

Each vial contains 200 µg IgG₁ kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

AlaRS (M6-P2E5) is recommended for detection of AlaRS of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) and immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)].

Suitable for use as control antibody for AlaRS siRNA (h): sc-72474, AlaRS siRNA (m): sc-72475, AlaRS shRNA Plasmid (h): sc-72474-SH, AlaRS shRNA Plasmid (m): sc-72475-SH, AlaRS shRNA (h) Lentiviral Particles: sc-72474-V and AlaRS shRNA (m) Lentiviral Particles: sc-72475-V.

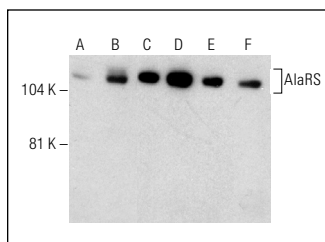
Molecular Weight of AlaRS: 107 kDa.

Positive Controls: AlaRS (h): 293T Lysate: sc-159852, MCF7 whole cell lysate: sc-2206 or HeLa whole cell lysate: sc-2200.

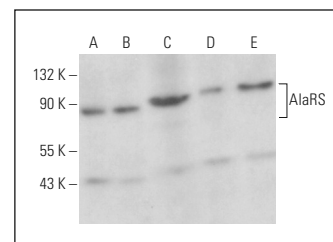
RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml).

DATA



AlaRS (M6-P2E5): sc-81712. Western blot analysis of AlaRS expression in non-transfected 293T: sc-117752 (A), human AlaRS transfected 293T: sc-159852 (B), MCF7 (C), HeLa (D), K-562 (E) and Hep G2 (F) whole cell lysates.



AlaRS (M6-P2E5): sc-81712. Western blot analysis of AlaRS expression in HeLa (A), BT-20 (B), HEL 92.1.7 (C), C2C12 (D) and NIH/3T3 (E) whole cell lysates.

SELECT PRODUCT CITATIONS

1. Jeong, S.J., et al. 2019. A threonyl-tRNA synthetase-mediated translation initiation machinery. *Nat. Commun.* 10: 1357.

STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.